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SEATTLE

AN INDUSTRIAL CITY

Showing Development of Eastern
Manufacturing Centers
and
Needs of Seattle

By
PAUL P. WHITHAM
Consulting Civil Engineer

Published by
INDUSTRIAL BUREAU, SEATTLE CHAMBER OF
COMMERCE

SEATTLE INDUSTRIES IN 1914

The comparative summary of Seattle manufactories issued by the U. S. Census Bureau for 1909 and 1914 follows:

	Census 1914	Census 1909	Per Cent of Increase 1909-1914
Number of Establishments.....	1,014	753	34.7
Persons engaged in manufactures.....	15,761	14,216	10.9
Proprietors and firm members.....	834	622	34.1
Salaried employees.....	2,498	2,071	20.6
Wage earners (average number).....	12,429	11,523	7.9
Primary Horsepower.....	44,001	38,267	15.0
Capital.....	\$61,317,000	\$46,867,000	30.8
Services.....	13,624,000	11,349,000	20.0
Salaries.....	3,689,000	2,760,000	33.7
Wages.....	9,935,000	8,589,000	15.7
Materials.....	37,770,000	28,783,000	31.2
Value of Products.....	64,390,000	50,814,000	26.7
Value Added by Manufacture (value of products less cost of materials)...	26,620,000	22,031,000	20.8

REPORT

PREPARED FOR
THE

PUBLICITY AND INDUSTRIAL BUREAU

OF THE

SEATTLE CHAMBER OF COMMERCE

BY

PAUL PAGE WHITHAM

Consulting Civil Engineer

SEATTLE, U. S. A.

1916

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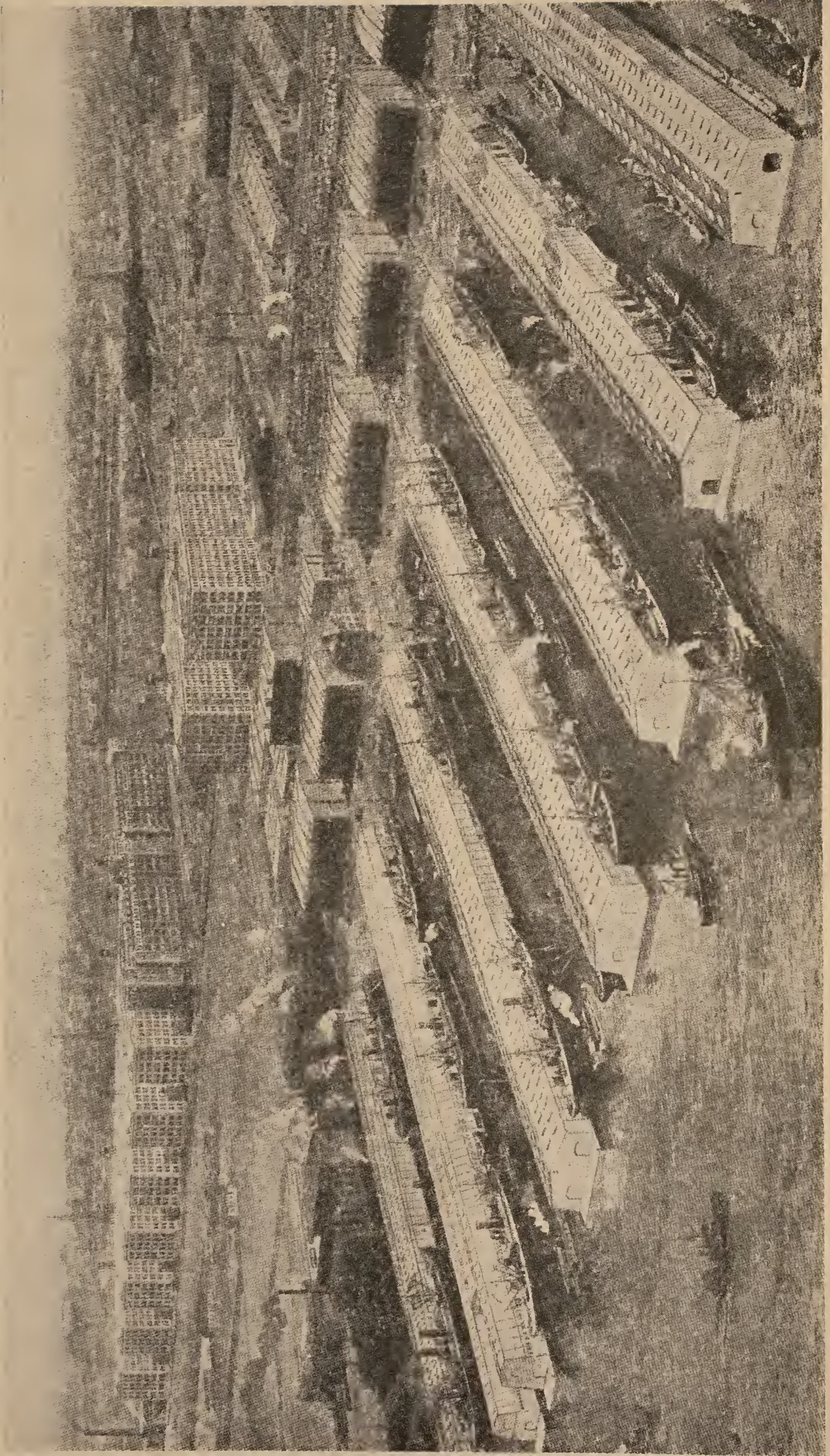


FIG. 1—BUSH TERMINAL, NEW YORK, A COMBINATION INDUSTRIAL AND COMMERCIAL TERMINAL WHICH HAS PLAYED AN IMPORTANT PART IN THE COMMERCIAL GROWTH OF NEW YORK, AND A TYPE OF DEVELOPMENT FOR WHICH THERE MAY BE A PLACE IN SEATTLE.

D. of D.
APR 3 1918

FOREWORD

This comprehensive and far-sighted report, covering industrial accomplishments of Eastern cities and industrial needs of Seattle, was presented to the Publicity and Industrial Bureau of the Seattle Chamber of Commerce in 1915 by Mr. Paul P. Whitham, a well-known engineer of this city. Although at that time not connected with the Industrial Committee, Mr. Whitham made the investigations and reports at his own expense, offering the results to the Bureau as his contribution to the community development work being carried on by this organization. A limited edition of the report has been printed by the Bureau for local and outside distribution. This valuable publication, by pointing out what has been done in other cities, with which Seattle is competing to secure and build up her manufactories, shows what this city must do to succeed and indicates a way by which she may more than hold her own in this industrial competition. Seattle citizens, when through reading this report, are requested to pass it to a friend for his perusal in order that the edition may be given as wide local circulation as possible. The earnest cooperation of every Seattle resident is desired by the Industrial Bureau in the work which it is now doing to carry out the ideas and suggestions in this report.

INDUSTRIAL BUREAU
SEATTLE CHAMBER OF COMMERCE

Members of Industrial Bureau, 1916

J. F. Douglas, Chairman

J. S. Brace
O. D. Fisher
Paul P. Whitham
Geo. Matzen
W. E. Herring

J. A. Swalwell
R. R. Fox
C. H. Black, Sr.
J. T. Heffernan
R. H. Mattison, Secretary

Seattle, October 16, 1915.

R. H. MATTISON, Secretary and Manager, Publicity and Industrial Bureau
of the Seattle Chamber of Commerce.

Dear Sir:

Pursuant to your request, while on a trip East in June, on professional business, I improved the opportunity to investigate as to what other cities are doing in the way of industrial promotion. On account of limited time at my disposal, my observations necessarily were not as thorough and extensive as I could have desired; but I was able to gather a certain amount of general information.

In September I had occasion to visit Los Angeles and San Francisco Bay communities, and thus extended my observations to those cities.

Viewing matters through the eyes of an engineer, naturally those things having to do with the physical equipment of the cities for industrial development appealed to me most strongly, and consequently the accompanying report emphasizes that side of the problem. As a result of my travels, my conviction that Seattle has great possibilities and my faith in her magnificent destiny has been strengthened.

If the information and suggestions set forth in this report shall prove of some assistance to the Industrial Bureau of the Seattle Chamber of Commerce in its contemplated campaign for Seattle's industrial development, I shall feel fully repaid for my slight efforts.

Respectfully submitted,

PAUL P. WHITHAM,
Consulting Civil Engineer.

SUMMARIZATION OF REPORT

The indications are that the Pacific Coast is about to enter the industrial era of its development; slowly at first, but at an accelerating rate.

The principal cities of the Coast are fairly evenly matched as things now stand. Industries tend to flock together, consequently the city that gets a substantial start over the others will have gained a distinct advantage in the race for industrial preeminence.

PREPAREDNESS is the expression of the hour and one particularly applicable to the situation, as the matter of preparation is likely to prove a determining factor in the struggle for industrial supremacy.

Preliminary to taking up the subject of preparation, a summarization of what other cities are doing is in order, as follows:

(1) Industrial promotion work is usually directed by a board or commission, the executive functions being in charge of a paid expert.

(2) Assistance is given existing industries in the matter of improving local conditions and the extension of markets.

(3) New industrial enterprises are sought, but with discrimination and thought as to whether or not the locality is the proper location for such enterprise.

(4) The industrial center scheme is proving successful in most communities.

(5) Special financial aid to new industries has not always proven satisfactory, but may be a benefit to particular communities if discreetly employed.

(6) The need of comprehensive planning for the industrial terminal development of cities is being recognized everywhere.

(7) The exploitation of trade possibilities in foreign countries is usually too large an undertaking for young industries, but a fit task for the community's industrial organization.

PREPAREDNESS

The work of preparation naturally falls into two divisions.

- I. PREPARATION OF THE INDUSTRIAL SITES.
- II. PREPARATION OF THE MARKET.

The important points pertaining to the Preparation of the Industrial Field are as follows:

- (1) A thorough study and analysis of Seattle's Industrial Field.
- (2) Outline a comprehensive plan for its development.

- (3) Bring about a terminal or belt-railway service which may be extended to all industrial properties as the development of the city requires.
- (4) Induce property owners to co-operate in the systematic and efficient platting and arrangement of their properties to the end that the advantages of the Central Manufacturing District and the Bush Terminals may be secured for all the industrial and terminal sections of Seattle.

The vital points in regard to the Preparation of the Market may be summarized as follows:

- (1) Thoroughly study the markets; not superficially nor in specific matters only, but broadly and fundamentally.
- (2) Analyze producing and distributing costs as between Seattle and established industrial centers in the East.
- (3) Dare to pioneer and do something different—not rashly, but with mature judgment.

Finally it may be said that we are now at the beginning of the industrial era on the Pacific Coast. The city that gets the start on the others in the next few years will have gained a big advantage, for the reason that industries tend to flock together. The movement once started toward a particular city will be hard to divert.

Consequently the determination of the Publicity and Industrial Bureau of the Chamber of Commerce to push energetically from now on the work of promoting Seattle's industrial development is most timely. The other Coast ports are getting ready, and it is now up to Seattle to mobilize its forces and make a hard, fast and sustained drive for the Coast's industrial leadership.

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INTRODUCTION

The consideration of the industrial upbuilding of our community should be based on a firm conviction that Seattle is destined to become a world city of the first magnitude and that eventually the Puget Sound Basin will become one of the chief manufacturing districts in the United States. The opportunities for trade expansion are such that the development of her commercial side alone will make Seattle a large city. But all the really great world cities are founded on both commercial and industrial development. While up to date our growth has been chiefly commercial, yet, after extended observation, I believe that centered in the Puget Sound district are the elements favorable to industrial development.

A small, but substantial, beginning has been made in manufacturing, and the indications are that Seattle is about to enter the industrial era; consequently it is opportune that at this time the problems incident to the advent of such an era be given thoughtful consideration.

Preliminary to a discussion of the local situation it may be well to review what is being done elsewhere along these lines.

PART I.

WHAT OTHER CITIES ARE DOING.

During May and June of this year I visited the following cities and industrial communities:

St. Paul	Minneapolis
Milwaukee	Chicago
Detroit	Cleveland
Buffalo	Boston
Providence	Fall River and New Bedford
New York	Newark and other Jersey industrial communities
Philadelphia	Pittsburgh
Baltimore	St. Louis and Kansas City

Later, in September, I visited San Francisco Bay cities and Los Angeles. While not traveling primarily for that purpose, I improved the opportunity, as far as time would permit, to study the industrial growth and look up the activities of the commercial organizations of the respective cities.

Briefly, the resulting observations are as follows:

(1) TWIN CITIES:

The commercial organization of Minneapolis is known as the Civic and Commerce Association, the industrial work being handled by a somewhat separate organization known as the Minneapolis Industries Association, of which Mr. Lewis H. Brittin is manager. Just now, the big work of the Industries Commission is the development of approximately 700 acres of land as an industrial center. You may be interested to know how this came about.

The Minnesota Transfer, located on the St. Paul side, is a clearing-yard for the nine railway systems centering at the Twin Cities. Adjacent to the Transfer Yards, in what is known as the Midway District, a surprisingly large number of industries have located in recent years. The magnet drawing these factories is the switching service performed by the Transfer Company, by which any industry has at its door shipping privileges over all the nine railway systems.

Noting this, and that practically all the new industries were being drawn to the St. Paul side, the Minneapolis Industries Commission determined to provide a similar situation on the Minneapolis side. As a result, a number of wealthy and public-spirited men were induced to subscribe to a \$300,000 fund with which to purchase and improve some 200 acres of unimproved land suitable for development as an industrial center. This tract has been platted in a manner that will insure an economical and efficient transportation service. The tracks of the Minnesota Transfer Company have been extended to the tract, whereby the factories to be located in the new district will be enabled to ship over any or all of the railroads.

As to the real estate side of the enterprise, the men who put up the money have agreed to content themselves with an ultimate return of the original investment plus six per cent. interest, thus assuring that property values will be kept low enough to be attractive.

While I was in Minneapolis one of the few remaining saw mills was being torn down, thus practically marking the final passing of the saw mill and lumber stage of the industrial activities of the Twin Cities. On Puget Sound the day of the passing of the timber industries is still a good way in the future, but we should now begin to prepare for the time when that takes place by the building up of varied and general industries.

(2) MILWAUKEE:

The work in Milwaukee is conducted by the Merchants and Manufacturers Association. This organization not only seeks new industries, but more particularly helps to build up existing industries by aiding in the solution of distribution and marketing problems. It also assists in the development of the entire State, thereby increasing the purchasing power of the districts which are most likely to purchase products of Milwaukee factories.

(3) CHICAGO:

At Chicago the organization corresponding to the Seattle Chamber of Commerce is the Chicago Association of Commerce, in which there is an industrial department. As you are aware, Chicago is already one of the largest manufacturing centers in the United States; so the work of the Industrial Department has not so much to do with the solicitation of new industries as with the rendering of assistance to industries desiring to obtain locations in the Chicago industrial terminal district. The industrial commissioners not only assist in the securing of locations for prospective industries, but also devote a great deal of time to improving the conditions and assisting in the development of industries already located. Such matters as taxes, transportation, city utility conveniences, municipal laws affecting the working of industrial estab-

lishments, are considered by the Department, and where hardships are worked upon industries an effort is made, often successfully, to correct such oppressive conditions.



Central Manufacturing District



Randolph 2235
Central - 3553
Automatic 7423

J. A. SPOOR AND ARTHUR G. LEONARD, Trustees

1305 FIRST NATIONAL BANK BUILDING

CHICAGO

H. E. PORONTO,

Industrial Agent

SCALE—300 Feet to 1 Inch

Jan. 1st, 1911

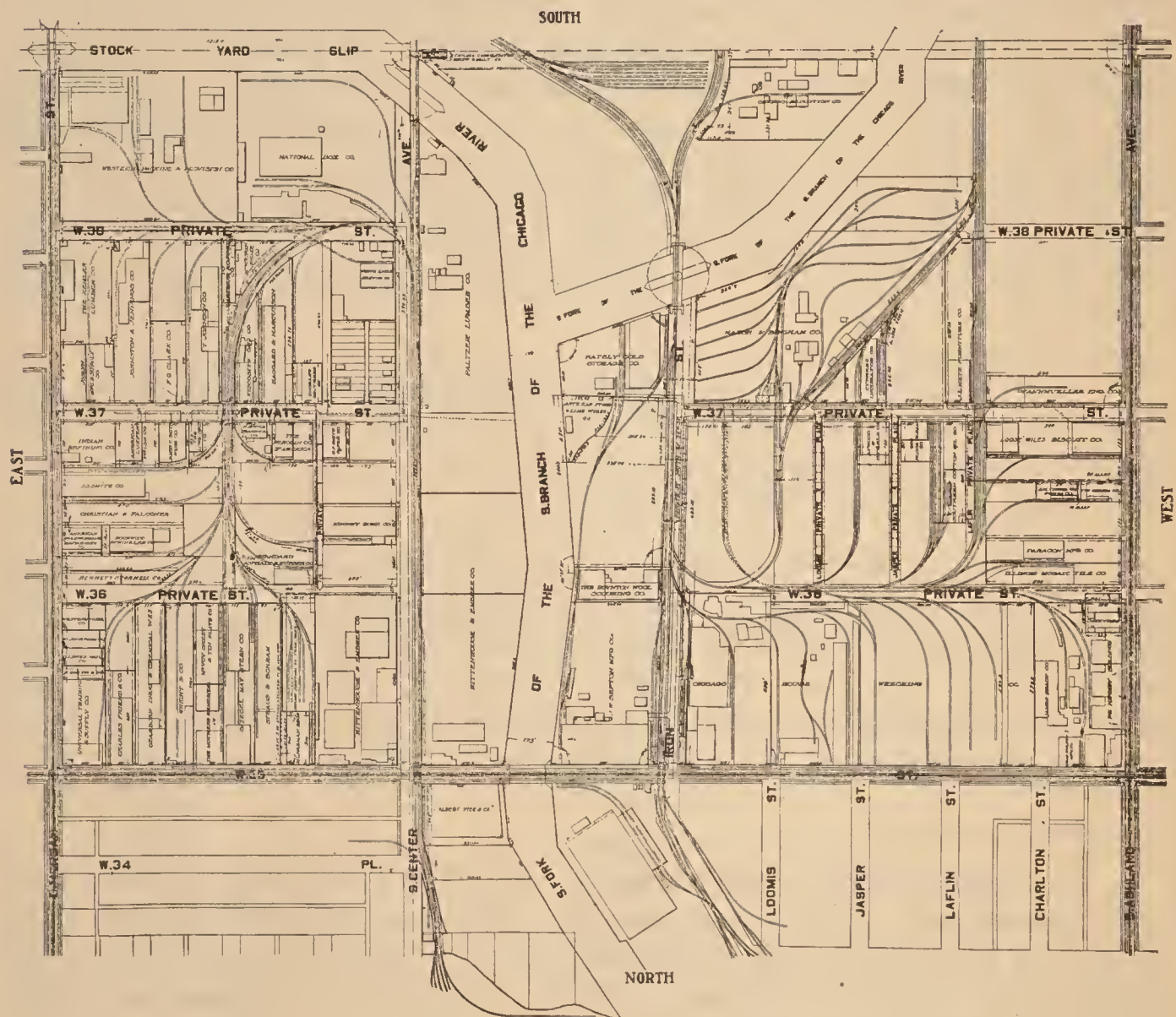


FIG. 2—GROUND PLAN OF CENTRAL MANUFACTURING DISTRICT OF CHICAGO, A 300-ACRE TRACT DEVELOPED AND OPERATED AS AN INDUSTRIAL TERMINAL. IT IS SERVED BY A BELT RAILWAY, A UNION L. C. L. FREIGHT-HOUSE AND UNION DOCK OR BOATHOUSE.

When a new industry is considering locating in Chicago, investigation of its requirements is made, and if it is found that it would not be advantageous for the proposed concern to locate in Chicago, it is frankly informed of the fact. An effort is generally made, however, to find a location at some point within the Chicago territory, in the adjoining States of Wisconsin and Indiana. Now and then a case arises in which a manufacturing concern feels that it is operating to a disadvantage at Chicago and proposes to move. Instances of this kind are investigated by the Department, which sometimes finds that the adverse conditions may be remedied, thus preventing the removal of the industry; while in some cases it is found that the particular concern would be

able to do better elsewhere: in that case they are frankly informed of the fact and are assisted in securing a new location—wherever practicable, of course, within the Chicago territory.

The Department keeps in touch with legislative matters affecting the interests of its manufacturing clientele, and is frequently active in securing remedial legislation, when such seems to be necessary.

The industrial center idea has obtained its most advanced development in Chicago in the case of the Central Manufacturing District, adjoining the Stockyards District. See Fig. 2 and Fig. 3. The Central Manufacturing District comprises some three hundred acres of property and is served by the Chicago Junction Railway, by which the industries therein have at their doors shipping privileges over any one or all of the thirty-one trunk railways. The property has filled up with the highest class of industries at a reasonably fast rate, factories being drawn by the same magnet that attracts them to the Midway District in St. Paul.

A general scheme of railway spurs has been installed, also the industries have provided for them a union freighthouse and union wharf.

The Indiana Harbor Belt Railway Company of Chicago, of more recent organization, has built what might be called the outer belt system. Adjoining its tracks and the great classification yards at Clearing, the largest in the world, industries are beginning to spring up, being drawn by the service of thirty-one railways through the Belt-Line Company.

(4) DETROIT:

The commercial organization of Detroit is known as the Board of Commerce, of which Mr. Byres H. Gitchell is secretary. Industrial matters are handled by an industrial bureau, the work of which is outlined by Mr. Gitchell as follows:

“At the present time we give each industrial proposition coming up individual attention. We submit a special statement in accordance with the facts which it is necessary for the party making the inquiry to know, in order to determine whether or not they can locate in Detroit with fair prospects of success.

“We are not distributing literature, and we are not working by circular. We take up each case by itself and go into it in just exactly the same way that any man would do who is negotiating for an investment. We find out what are the essentials for success in connection with the particular industry, and we then make a report covering these various points in detail.

“We do no work whatever in connection with the raising of capital. Ours is an informational service entirely.”

(5) CLEVELAND:

The work at Cleveland is conducted by the Manufacturers and Wholesale Merchants Board of the Cleveland Chamber of Commerce. Like the Milwaukee Board, it works to build up its industries by assisting in the development of a market. A great deal of attention is being given to the improvement of living conditions for workmen and obtaining better and more economical transportation facilities for manufacturers and merchants. Recently the Board has been particularly active in regard to new terminal enterprises, among which

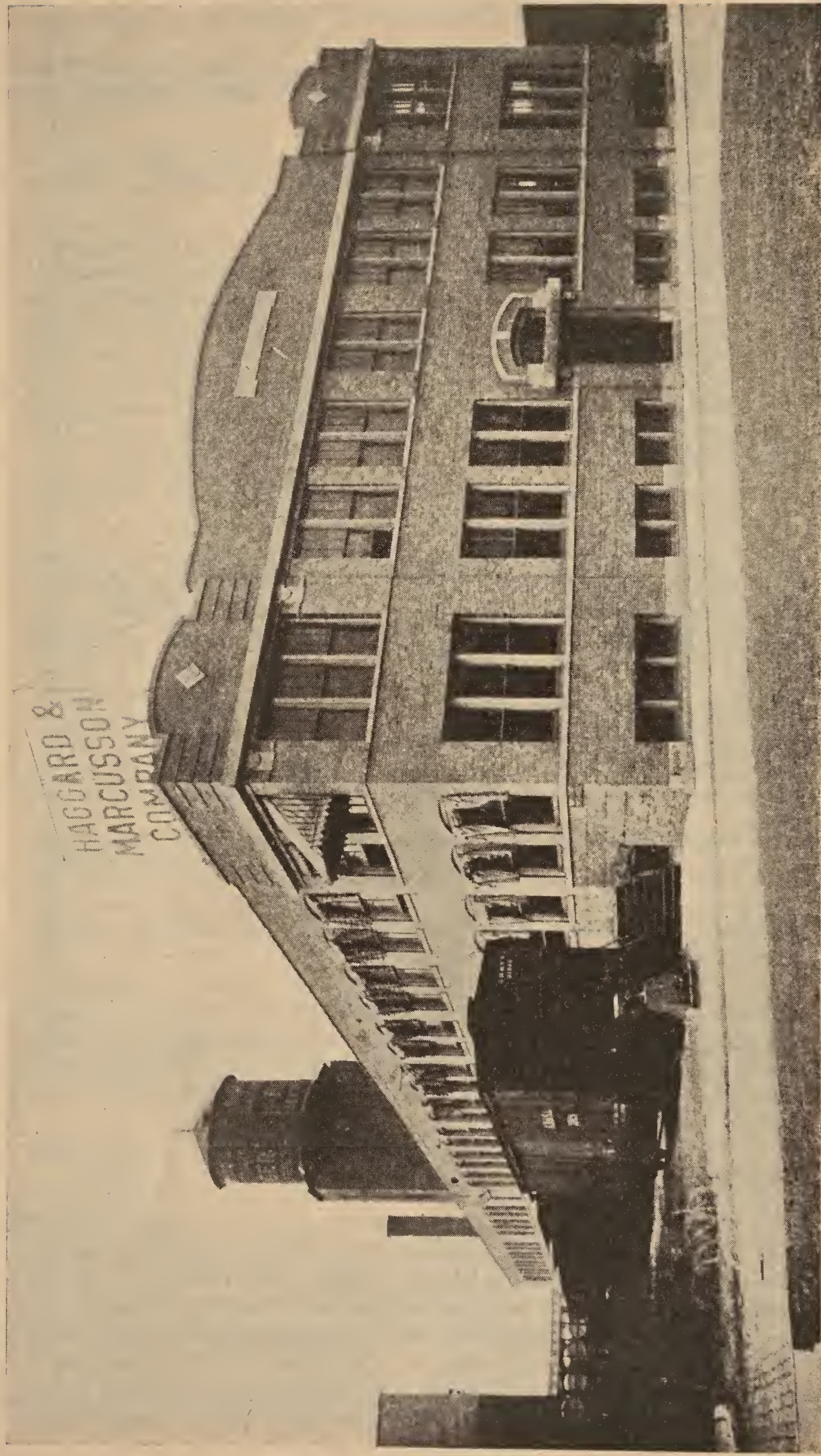


FIG. 3.—TYPICAL INDUSTRY IN THE CENTRAL MANUFACTURING DISTRICT, CHICAGO. INDUSTRIES HAVE BEEN SO ATTRACTED BY THE ADVANTAGES OF THE TERMINAL DISTRICT THAT ITS GROWTH HAS BEEN REMARKABLY RAPID.

is a tunnel scheme, for which a franchise was granted by the City of Cleveland. This tunnel, or subway, for railway tracks will connect the lake front with the railway terminal districts a mile or two back therefrom. The tunnel passes under a busy part of the city and will be so constructed that jobbing houses and factory lofts may be built along the sides of the tunnel and be served by railway tracks at the basement levels.

(6) BUFFALO:

The Buffalo Chamber of Commerce works along somewhat similar lines to that done at Cleveland. The Buffalo people are looking forward to the opportunity for industrial expansion in connection with the completion of the Lake Erie Barge Canal and are pushing the development of the district along the Canal within Buffalo proper and on down as far as Tonawanda. This suburb is an important terminal on the Canal and about it there has already developed an important manufacturing community.

(7) BOSTON:

The Boston Industrial Development Board is actively engaged in the work of creating in and about Boston conditions that will attract factories. Furthermore, it is compiling and furnishing the existing industries information concerning markets and trade opportunities. A recent publication, for instance, calls attention to trade opportunities in Siberia and gives pointers as to how to enter that market.

One of the big problems confronting the Boston Board arises from the fact that, in the words of the Chairman of the Board, "the City is seriously handicapped for development as an industrial center because of inadequate railroad service for short haul, and for connecting service between factories and manufacturing plants, wharves, docks and terminals." The Board is trying to rectify the mistakes of past hit-or-miss growth, so far as it is now possible to do so. In that respect the East Boston Company, owning several thousand acres of shore and tide-flat property, has started the development of an industrial terminal district in which workmen's homes are provided adjoining the industrial sites. The Company builds and sells these homes; it will also build for manufacturers if desired.

(8) PROVIDENCE, FALL RIVER, NEW BEDFORD:

In the three New England cities, Providence, Fall River and New Bedford, the prosperity and recent growth, founded on manufacturing, exemplifies the industrial development which has taken place throughout New England in the past twenty-five or thirty years that has made that section of the country one of the wealthiest portions of the United States, although in natural resources it is far inferior to many other sections.

Chief among the industries of these places are the great textile mills, which flourish in that part of New England partly on account of climatic conditions, which are favorable to the weaving and spinning business. Some of the managers of these mills with whom I talked expressed the opinion that the Puget Sound climate was, if anything, more favorable to the industry, but seemed to think that the lack of labor of the proper sort would prevent the establishment of textile industries on Puget Sound in the near future. However, in this regard it might be recalled that the earlier mills of New

England were without the required labor and that the laborers were imported from England; consequently our condition now, in that respect, is not materially different from that of New England when the industries first started there. The advantages that would accrue from the establishment of the textile industry in the Puget Sound country are so great that it is certainly worth while investigating and studying the matter with a view of ascertaining whether or not the seemingly insurmountable obstacles can not be overcome. The situation in these New England cities simply emphasizes the statement that industries tend to flock together. That is, where a certain class of industry becomes established in a community, all new enterprises in that line tend to seek locations in that same community. The lesson to us is that there are continually new classes of industries being developed by inventions and new applications of raw materials to modern uses. While it may be hard to direct manufacturing plants here that will compete with established concerns in the well-built-up older communities, it may be possible from time to time to secure some new class industry which, if successful, would tend to attract other enterprises of a similar character to the Puget Sound country.

(9) NEW YORK:

The problem in New York is one of relieving congestion and finding room for the industries desiring to locate, rather than a campaign for new factories. The magnet drawing industries to New York and vicinity is the fact that more trade routes center there than elsewhere in this country. This is a good omen for Seattle, which is rapidly becoming a great trade-route center.

The energies of the New York Chamber of Commerce and the Merchants Association, in particular, are largely employed in an attempt to correct transportation and industrial conditions which are the outgrowth of a lack of forethought and planning in the past.

The success of the Bush Terminal Company has indicated the way out. See Fig. 1. Hope lies in the direction of Jamaica Bay and on the Jersey Shores, about Newark Bay and estuaries, where the development of tide-flat properties is now under way. Industrial terminal centers similar to the Central Manufacturing District in Chicago are contemplated, only on a much larger scale.

The New York situation should be an object lesson to Seattle, bringing home the need of preparing now the broad foundation for the great industrial Seattle of the future.

(10) PHILADELPHIA:

Philadelphia is preeminently a manufacturing community. Scattered hither and thither are thousands of industries located in the characteristic American happy-go-lucky fashion, lacking properly organized and co-ordinated transportation and shipping facilities. The Philadelphia Chamber of Commerce is helping to improve these conditions and is primarily a medium of co-operative publicity.

Recently, under the direction of the Department of Docks and Ferries of Philadelphia, with the co-operation of the Chamber of Commerce and other civic organizations, the railroads and the Dock Department have been brought together on a proposition whereby a large unimproved district in

South Philadelphia is to be improved as a large railway and shipping terminal, in connection with which large tracts of property will be made available for industrial uses. The railway companies are to build jointly a marginal belt-line to serve the City's dock on the one side and the private industries already applying for locations on the property back of the docks. The result of this recent arrangement will make of the South Philadelphia district a great industrial center with transportation advantages much superior to those generally obtained in Philadelphia.

(11) BALTIMORE:

Baltimore in its conservative substantiability reminds one of Boston. Its accumulated wealth permits the financing of its enterprises at home.

Though conservative, Baltimore is not content. Its Factory Site Commission is out for more factories and is endeavoring to improve the transportation and terminal conditions, thereby increasing the City's attractiveness as a location for industries. Two things being done by the Factory Site Commission are worthy of note:

(1) An effort is being made to get into the South American trade. To assist in the matter, an attractive booklet, printed in Spanish, has been published, in which the port-terminal and trade advantages of Baltimore are set forth.

(2) A system has been devised whereby when a party comes to the city seeking a site for an industry, his needs and requirements, and address while in town, are printed on cards and mailed to the owners and agents of possible factory site property. The recipients of these cards forthwith get in touch with him and vigorous bidding ensues, resulting in the prospective manufacturer getting bed-rock property value quotations.

(12) PITTSBURGH:

Pittsburgh and Seattle in a way are confronted with a similar condition in that both have largely a one-commodity industrial growth—Pittsburgh, steel and iron; Seattle, timber products.

The Pittsburgh Industrial Development Commission, which is a particularly effective organization, is bending its energies to the task of locating diversified industries at Pittsburgh, so that the City's prosperity will not depend entirely on one class of production. The rough sledding the Puget Sound lumber industry has had during the past few years has emphasized the need of Seattle doing likewise, while, at the same time, as in Pittsburgh, promoting the interests of its major class industry.

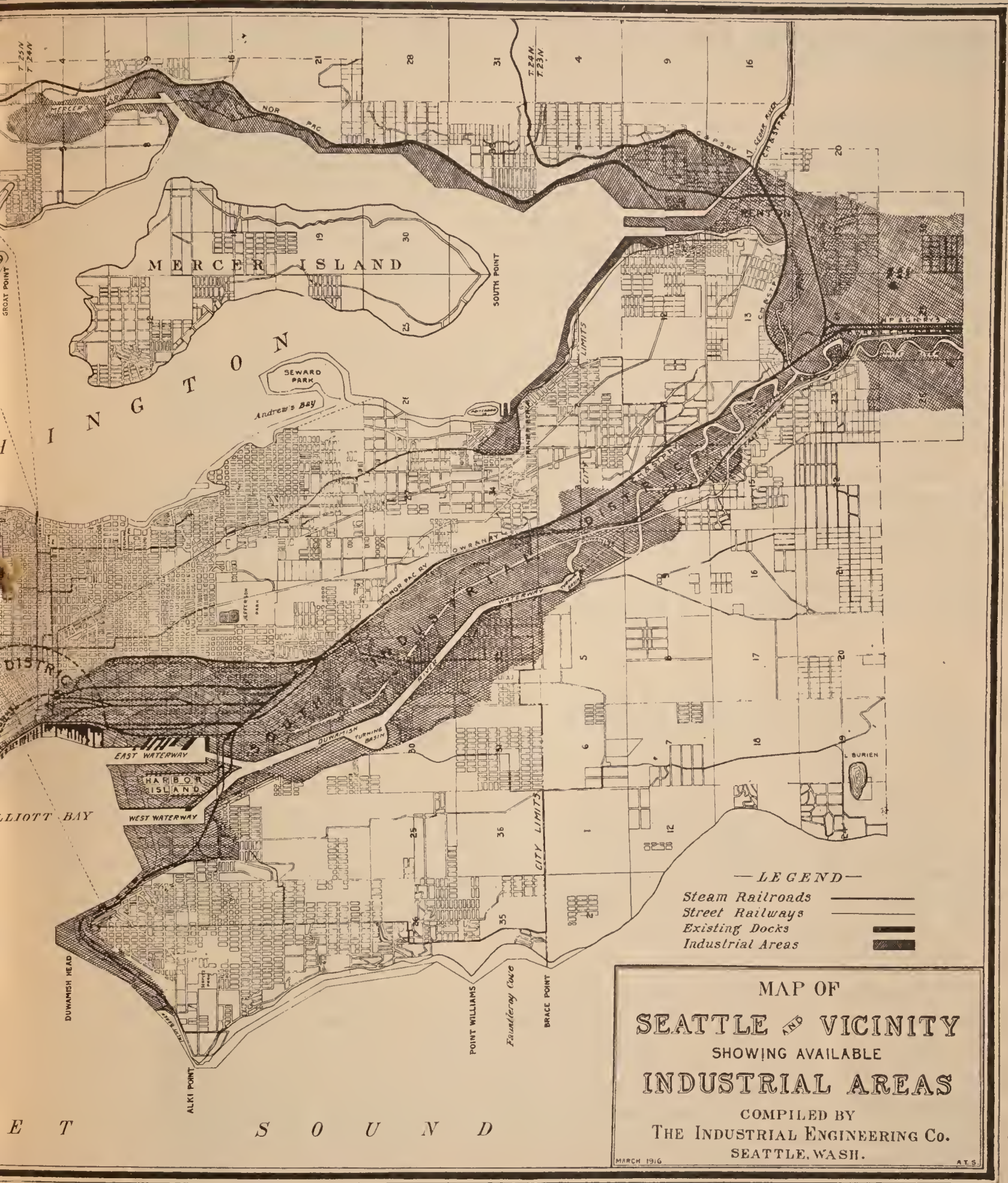
The Pittsburgh Industrial Development Commission was the only organization visited that had an industrial map of the community. On this map are shown all the industries, warehouses, railways, freight-houses and other shipping and transportation facilities of the Pittsburgh industrial district. The unimproved property available for industrial uses is indicated. The purpose of the map is to enable the industrial commissioner to show those desiring factory sites just what sites are available; the relation of the various pieces of property to the existing industries, the transportation facilities and labor residential districts. In short, at a glance the map will furnish practically all of the information desired. Furthermore, it serves as a basis on which to plan the improvement and extension of facilities required by industrial enterprises.

DESCRIPTION

The areas in and about Seattle suitable for industrial and commercial purposes are indicated on the map by shading lines in hatching. For the information of those not familiar with Seattle's topography the City for the most part is built on hills and ridges the crests of which attain elevations of from 100 to 500 feet. The shaded portions are level valley and shorelands, the flat low-lying position of which facilitates the construction of railway and other transportation facilities necessary to industrial development. These topographical features obviously are advantageous in that there results a natural separation between residence and industrial districts, avoiding the unpleasant complications that occur in comparatively level cities.



FIG. 4—MAP OF SEATTLE AND VICINITY, SHOWING SHA



ED WATERFRONT, RAILWAY AND INDUSTRIAL AREAS.

Another matter worthy of note: The Industrial Commission has published, in English, a complete commodity index of things produced in the Pittsburgh industrial district. This is now being translated into foreign languages, notably Spanish and Russian. Probably Japanese and Chinese editions will be added.

(13) ST. LOUIS:

St. Louis has not organized for industrial promotion as thoroughly as some places; but the matter of replanning and improving industrial terminal conditions is now being agitated. The Cupples Station at St. Louis is a sort of inland Bush Terminal. This large group of freight and warehouse buildings is served by the tracks of the St. Louis Terminal Railway system. It is badly congested, the business offering having outgrown the facilities.

(14) KANSAS CITY:

The work in Kansas City is conducted by a paid executive—the Industrial Commissioner of the Commercial Club of Kansas City. The Commissioner stated that the best advertisement of his City's industrial advantages is a satisfied and prosperous industry. Consequently, acting on that theory, he frequently advises prospective manufacturers to locate elsewhere, if after careful investigation he finds that Kansas City is not a satisfactory location for that particular class of industry. In other words, he acts on the theory that Kansas City is the logical location for certain lines of industry, while for others it is not. Just what classes will flourish, he is trying to determine, in order to concentrate effort on those lines.

(15) SAN FRANCISCO BAY CITIES:

The Industrial Commission work for San Francisco proper is handled by the San Francisco Chamber of Commerce, through their Industrial Department. In this work they co-operate with the California Development Board, a State organization.

The Department has been making a special effort during the Exposition to interest visiting manufacturers from the East, who have been maintaining Western distributing houses, in the advantages of locating branch manufacturing plants at San Francisco or on San Francisco Bay. Such work does not, however, necessarily bring immediate results, but the indications are that some good seed has been sown.

The secretary, Mr. Warren Manley, told me he was working along lines similar to those of the Industrial Commissioner of Kansas City.

There is considerable property within the limits of the County and City of San Francisco which may be made suitable for industrial purposes. The Industrial Department has experienced difficulty in getting spur tracks extended to industries after they had purchased sites. As a consequence, they laid the matter before the City Council, and, after some effort, had an ordinance passed outlining, designating and describing industrial districts within which the City Council agreed to grant spur track permits as required by industries that might thereafter be located. In this connection the Department is getting out an industrial map along lines quite similar to the map prepared by the Pittsburgh Industrial Commission.

There seems to be quite a keen rivalry between Oakland and San Francisco, as a result of which the Industrial Departments in San Francisco and Oakland apparently are not co-operating to an extent that would be advantageous to the San Francisco Bay district as a whole. On the east side of the Bay, of course, certain classes of industries, particularly those requiring large acreage, can be located to the best advantage.

The Industrial Bureau of the Chamber of Commerce of Oakland is very active in its efforts to assist in the industrial development of the East Side of the Bay and to bring about better improvement of its waterfront facilities by the city authorities of Oakland.

At Richmond, a little north of Berkeley and Oakland, a small manufacturing town in which considerable industrial growth has taken place in the past few years, is located a branch of the Baltimore Car Works, the big refineries of the Standard Oil Company, and quite a number of other important industries. The City of Richmond, which owns the waterfront or tideflat areas, has recently had a comprehensive industrial plan of the district prepared and is now constructing the first unit in a dock system designed primarily to serve the industrial district of Richmond.

There are vast areas of low-lying and unreclaimed tidelands about the shores of San Francisco Bay, particularly on the East Side, which may be made suitable for industrial uses. These areas are so extensive that there is little need of the Bay cities worrying about shortage of industrial sites, providing the properties are improved and put in shape for such purposes. In fact, the areas available are considerably more extensive than in the Puget Sound district.

(16) LOS ANGELES:

The Industrial Bureau of the Los Angeles Chamber of Commerce is very active in the promotion of the industrial development of Los Angeles and surrounding country. As proof of the effectiveness of their efforts, they have a long list of new industries which have been located in Los Angeles in the past two years. The Industrial Bureau has made quite a study of the possibilities in the way of developing new industries based on the raw materials available in Los Angeles territory, as a result of which quite a number of industries utilizing these materials have been promoted, and while some of them have started on a very small scale, they seem to be making good.

The Harbor of Los Angeles, located at the former town of San Pedro, has been greatly improved during the past couple of years, so much so that where there formerly was practically no harbor at all there is now a good workable port with some up-to-date and very attractive dock and warehouse facilities.

In the dredging of the channels a large amount of low-lying land has been reclaimed. This reclaimed property is admirably suited for industrial purposes, and an effort has been made to have it platted and arranged with a systematic railway service co-ordinated with the shipping facilities on the harbor.

The Los Angeles Industrial Bureau has issued a manufacturers directory and commodity index which is very attractive in form and is similar in intent to that issued by the Industrial Commission of Pittsburgh.

In concluding these references to the Pacific Coast cities I may say that the general conditions affecting industrial development are substantially the same all along the Coast. That is, competition with established industries in the older communities of the East is having a retarding influence on the manufacturing growth of the newer cities of the Pacific Coast. But some progress is being made all along the line. I believe that the honors are about equal as between Puget Sound and San Francisco and Los Angeles; that is to say, at the present writing these cities have practically an even start. Industries have a tendency to flock together, so that the city which obtains the jump on the others in the matter of industrial development will at once gain a great advantage in the fact that industries will thereby be drawn naturally to that place.

San Francisco and Los Angeles are alive to the situation, which, of course, means that Seattle must bestir herself diligently. There are, however, I think certain conditions existent in the Puget Sound country which are quite favorable, and it may be, by well-directed effort, that Seattle during the next few years will secure the lead as a manufacturing center to such an extent that it will be difficult, if not impossible, for the other cities to ever catch up.

In the matter of platting the industrial terminal properties about the city so as to insure efficient and systematic industrial growth, I would judge, from my talks with parties in Los Angeles and San Francisco, that those interested in the work of industrial bureaus do not fully appreciate the advantage of a physical plan of development to anything like the extent that the men in Seattle do. When I observed this lack of appreciation of the importance of such matters I did not take the trouble to enlighten them, as I feel that the Industrial Bureau of Seattle in this respect has an opportunity to take hold of the matter in such a way as to gain a distinct advantage over the other Coast cities.

SUMMARY OF OBSERVATIONS

(1) Industrial promotion work is usually directed by a board or commission, the executive functions being in charge of a paid expert.

(2) Assistance is given existing industries in the matter of improving local conditions and the extension of markets.

(3) New industrial enterprises are sought, but with discrimination and thought as to whether or not the locality is the proper location for such enterprise.

(4) The industrial center scheme is proving successful in most communities.

(5) Special financial aid to new industries has not always proven satisfactory, but may be a benefit to particular communities if discreetly employed.

(6) The need of comprehensive planning for the industrial terminal development of cities is being recognized everywhere.

(7) The exploitation of trade possibilities in foreign countries is usually too large an undertaking for young industries, but a fit task for the community's industrial organization.

PART II.

WHAT SEATTLE SHOULD DO.

Standing out among the pertinent thoughts gathered as the result of studying what other cities are doing there is one preeminently applicable to Seattle. It is *preparedness*, a war term, but as applicable to peaceful struggles. Chief among the lessons to be learned from older communities is that a great deal of efficiency has been lost on account of the failure to plan ahead and prepare the field in which the industrial growth is to take place. This thought involves, also, the problem of preparing the market. All of which leads to the consideration, under the general head of *preparation*, of two subjects, as follows:

FIRST. PREPARATION OF THE INDUSTRIAL SITES.

SECOND. PREPARATION OF THE MARKET.

The importance of these two subjects arises from the fact that a city must prepare in the beginning for the industrial triumphs it would win in the end.

PREPARATION OF THE INDUSTRIAL SITES.

Preliminary to a consideration of preparation problems it would be well to determine what that field is. Our field is larger than the City of Seattle and environs. It includes the Puget Sound Basin and may be termed the Puget Sound Industrial Field. Rectangular in form and about 60 miles in width, the district may be said to have an area of 10,000 square miles and extend from the International boundary on the north to Centralia on the south. The Puget Sound Basin is not an excessively large area in which to center a great industrial development, especially as we know that only a small portion of the territory is suitable property on which to locate manufacturing plants. This seems rather absurd, perhaps, to those who have been struggling during the past few years to pay taxes on large tracts of non-income property suitable for manufacturing purposes but with no industries seeking it. The next decade, however, will make the statement sound reasonable, and a half-century will prove it to be true.

While boosting for the entire Puget Sound Basin, we are more particularly, of course, interested in the Seattle District.

SEATTLE INDUSTRIAL DISTRICT:

Referring to Fig. 4, the Seattle District is indicated as extending from the Snohomish County line on the north to an east-and-west line through Three Tree Point on the south, and includes Lake Washington. Within this area there are several distinct terminal and potential industrial sections, which for convenience may be designated as follows:

- (1) The North Industrial Section.
- (2) The South Industrial Section.
- (3) The Lake Washington Industrial Section.



FIG. 5—SUGGESTED SCHEME OF RAILWAY SERVICE AT THE SOUTH END OF LAKE UNION, PREPARED BY A. L. VALENTINE, SUPERINTENDENT OF PUBLIC UTILITIES.

The North and South districts are of greater immediate consequence than the third, on account of their proximity to the business center of the city and the railway and shipping facilities at hand.

(1) *The North Industrial Section:* This district may be said to comprise the low-lying areas at Interbay, Ballard and about Lake Union. The major portion of the Interbay property is owned by the railway companies and the Port Commission, and will eventually be required for transportation purposes. The centering there of railway and shipping facilities will make such property as is available especially desirable industrial sites. On account of the limited areas, plans should be made that will insure the utilization of every square foot to the best advantage. This may be said of the Ballard District also.

North of the Canal, between Third and Fifteenth Avenues Northwest, there is considerable level property which is largely spoiled for industrial development by the present awkward platting. The potential value of the section for intensified industrial growth is such that radical action, if necessary, should be taken to replat and shape it so that it may be used efficiently and to the best advantage.

Lake Union, right in the heart of the city proper, is destined to become one of the busiest places in this or any other city, for that matter. Here will center the inner harbor water-cartage and lighterage business, which in time will rival in density the similar traffic at the Port of New York. Consequently, the fringe of property about the lake will be used intensively.

The section of greatest importance, however, is situated at the south end of Lake Union; important not only for the reason that it is the largest low-lying area adjacent to the lake shores, but because it joins directly with the growing retail and business center of the city. So desirable will this section become that eventually it will be occupied with sky-scraper industrial and warehouse buildings. The best use of the section cannot be made unless the property is largely replatted to permit of its being given efficient transportation service. Perhaps more than at any other point in the city is it important that this revamping of the property be brought about. Furthermore, if it is not accomplished soon it will be too late. See Fig. 5.

(2) *The South Industrial Section:* The section including the "tide-flats" and the Duwamish and White River valleys is the largest district near the city for industrial development. The valley between Black River Junction and Auburn will be sought by large manufacturing institutions which require extensive areas on which to spread out. In this valley also will be located the big railway classification yards. The tide-flats north of Spokane Street, and perhaps for some distance south therefrom, will be used ultimately by enterprises like the Sears-Roebuck Company, jobbing and warehouses, industrial lofts and industrial plants that may be housed in compact buildings.

Along the Duwamish Waterway, if its use is properly fostered, will be attracted the manufacturing concerns that require both water and rail shipping facilities. The laying out and improvement of the East Marginal Way is a step in the right direction and should be followed by the provision of a West Marginal Way. These improvements, while constituting the foundation for

the valleys' development, are not all that is necessary in order to reap fully the potential advantages of the situation. Every effort should be made to insure the platting of all acreage in the most efficient manner, and, as far as is practicable, much of the existing platting should be rearranged. It is a difficult task, but the rewards will justify the necessary effort. See Fig. 6.

The crown, if an industrial district may be said to have a crown, to the Duwamish section is Harbor Island. See Fig. 7. It certainly will be a great opportunity lost if Harbor Island is allowed to be split up into small unrelated improvements. It is to be hoped that some way will be found, before it is finally too late, to improve the Island as an industrial and terminal unit. The obstacle in the way of its immediate utilization seems to be the high price at which the property is held, and you can hardly blame the present owners, who paid large sums for their holdings.

(3) *Lake Washington Industrial Section:* About Lake Washington, as is well known, are several locations where considerable level property may be made available for manufacturing purposes. Chief among them is the Renton district, through which the railways pass; and the White River valley district which has access to the Lake. Then there is Mercer Slough, Juanita Bay, the north end of the lake, and Pontiac or Sand Point, besides other lesser places. About the time the lake is lowered, many of the owners of property in these localities undoubtedly will endeavor to start improvements thereon. Before this is done, however, provision should be made for marginal street and railway service at the more important places. An effort should be made to get together on some comprehensive scheme for the development of the lake. I am encouraged to think this may be accomplished, as it was nearly brought about at the time the State platted the shorelands.

In this discussion, railway service has been referred to repeatedly, which suggests the subject of a terminal—or belt-railway system for Seattle.

TERMINAL RAILWAY:

As noted under the head of "What Other Cities are Doing," the chief magnet which has attracted industries to the Central Manufacturing District at Chicago is the universal railway service obtained through the belt or terminal system. If such an arrangement is good for one district, why not apply it to all the industrial and shipping sections of the city, so that all the industries of the community may enjoy the advantages accruing from the opportunity to ship over any or all of the railway lines serving the community?

The marginal street, Railroad Avenue and its extensions about Elliott Bay, is a great asset to Seattle. A physical belt-line already exists along this thoroughfare. What is needed is its perfection as an operating belt railway and the organization of a terminal railway association or company that will serve all the existing industries and be in position to extend its tracks into new property a little ahead of its required development.

The Port Commission has been authorized to go ahead with a small unit of a public belt-line system, although the funds therefor have not been voted. If that is the only way such a system can be secured, by all means push it along; but I believe it would be much better and less expensive to the community to have the railway companies themselves organize a terminal

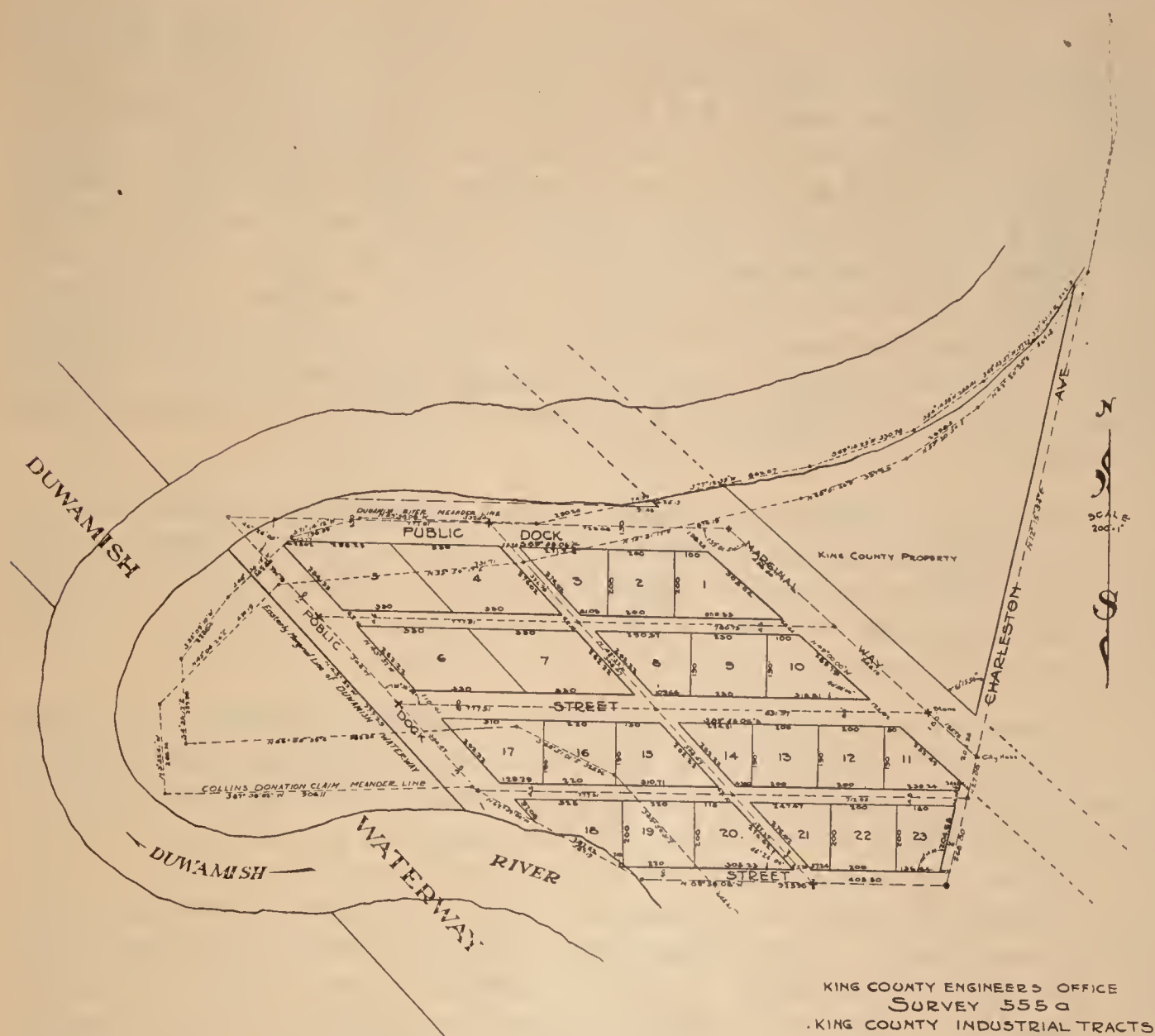


FIG. 6—KING COUNTY INDUSTRIAL PLAT ON DUWAMISH WATERWAY, SUGGESTIVE OF THE MANNER IN WHICH SUCH PROPERTY SHOULD BE PLATTED.

railway. In the beginning, little new trackage would be required, as existing tracks are for the most part available. The pioneer railroads are reluctant to do this on account of certain advantages they now enjoy. They should be compensated by later arrivals for the loss of their advantages; but if the terminalization of the city is delayed too long the new roads will reach the districts they are now shut out of anyway, and in a manner that will prove more costly all around.

Therefore, I believe if the influential men of the City will put their shoulders to the wheel they and the railroad officials can bring about a terminalization of the Seattle District resulting in much good for the community and the railway companies as well.

LOW COST FACTORY BUILDINGS:

While discussing the matter of making the local field attractive for manufacturing concerns, it may be well to call your attention to an advantage of some importance to Seattle, the home of the big structural timber, that may be obtained by advocating the use of timber in the construction of mills and factories.

I have had occasion to give this subject a great deal of consideration, and I find that one of the chief reasons why timber is not always looked favorably upon as a building material is that in the past it has been greatly misused. In districts somewhat removed from the business center of the city what is known as the mill-type of construction, that is, masonry walls with interior columns, beams and floors of wood, if well protected with automatic sprinkler devices and properly constructed, may be made practically as good a fire risk as a so-called absolutely fire-proof building. It is also possible to erect entire structures of wood, so protecting them that they are a very fair fire risk. Such buildings will cost anywhere from 20 to 40 per cent. less than the so-called permanent fire-proof buildings and will serve the purpose in most cases just as efficiently.

There is an additional advantage which is particularly applicable to this, a newly developing country, in that the mill or timber type of buildings may be easily and cheaply removed or altered to meet new conditions, or to allow for the rearrangement or entire replacement of plants in connection with the expansion of business.

One of the chief difficulties encountered by most new industrial concerns is the raising of enough capital to erect the necessary buildings and still have sufficient working margin to promote the business. The fact that here on Puget Sound, where timber is cheap, buildings may be put up from a quarter to a half less than they would cost if erected of the permanent type of construction might be held up as an inducement for the location of factories in the Puget Sound district. In so doing there would be a double advantage in the fact that the timber industry, which will remain for some time to come the most important in Western Washington, would be favorably affected thereby. In any event, the matter is of sufficient importance to be given careful consideration in connection with promotion work.

FREE PORT DISTRICT:

The creation of a free port district has been under discussion at New York and at some of our other leading coast cities. In fact, considerable thought is being given to the matter on both the Atlantic and Pacific coasts. The idea is, perhaps, best exemplified by the free port district at Hamburg; in fact, the major portion of the harbor is included in the free district. Briefly, the application of the idea would be as follows:

A section of the harbor suitable to both shipping and industrial development would be designated as the "free district," which in reality is an application of the bonded warehouse system, to include several hundred, or perhaps several thousand, acres of land. The district would be bounded either by physical or imaginary fences. Within the area so set aside foreign goods could be landed and stored without paying duty, just the same as in a bonded warehouse, and raw materials could be brought in for use in manufacturing without paying duty. When finished products are to be exported they would leave the port without any tariff interference. If any of the goods that have been in storage, or that have been manufactured in the district, are finally disposed of within the United States, they would, upon leaving the district, be subject to the usual tariff regulations. So far as tariff restrictions are concerned, this district would be a little foreign country in itself. The scheme

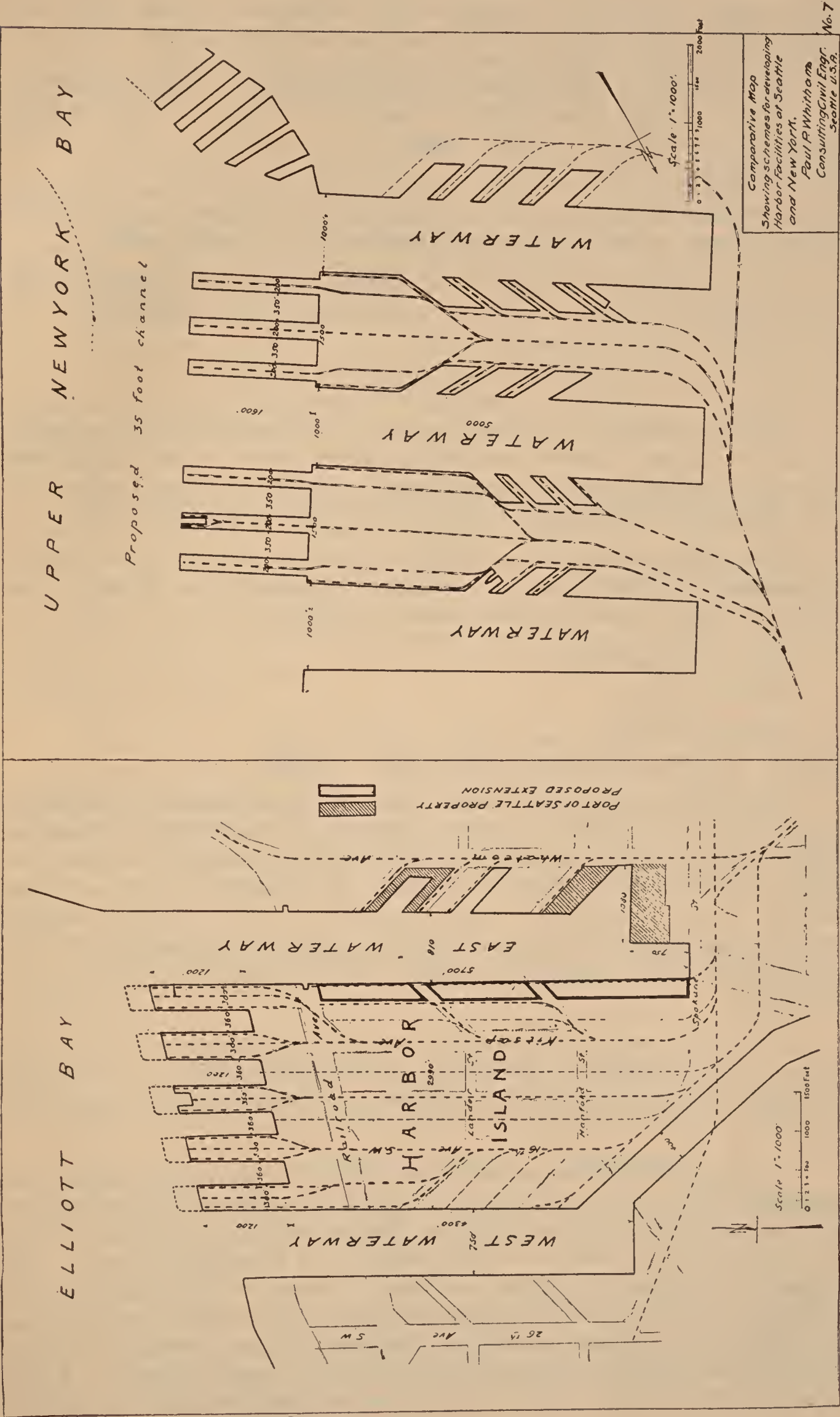


FIG. 7—HARBOR ISLAND AND PROPOSED SHIPPING AND INDUSTRIAL TERMINAL ON THE JERSEY SHORE OF NEW YORK BAY, DRAWN TO THE SAME SCALE. THE LOGICAL DEVELOPMENT OF THESE PROPERTIES WOULD BE SIMILAR TO THE BUSH TERMINAL.

has been quite successful at Hamburg and, I understand, at some other ports of the world. It has never yet been tried out in this country.

Mr. Will H. Parry, Federal Trade Commissioner, former member of the Industrial Bureau of the Seattle Chamber of Commerce, as you will remember, when in Seattle recently, suggested a consideration of the free port district idea.

It would, of course, require an enactment by Congress, authorizing the creation of such a district under such regulations as it might impose.

I have referred to the matter here, as there appears to be sufficient merit in the suggestion to make it worthy of careful study and consideration.

WORK OF INDUSTRIAL BUREAU

Enough has been said to reveal some of the possibilities of the industrial field and to suggest a few of the principal things necessary to its preparation for the much-desired industrial development. All of which leads to the question: What can the Industrial Bureau of the Chamber of Commerce do?

The preparation of the local field, as a matter of fact, resolves into a transportation problem, which may be said to be three-fold in character; that is, there are three elements to the problem, as follows:

Water Transportation,

Railway Service,

Property Platting,

each one of these obviously dove-tailing into the other.

The water transportation matters are pretty well covered by the efforts of the Federal Government, the Port Commission, the Duwamish Waterway Commission and private enterprise. The industrial development of the community, however, will require the perfection and extension of the waterfront facilities. In this connection a closer association of effort should be obtained between those having to do with waterfront improvements and the railway companies, industrial property owners and those in a position to initiate private enterprises.

The railway phase of the problem is one of terminalization of the railway trackage so far as relates to the service of industrial properties. This should be brought about by the railways themselves, through joint and co-operative action.

The property problem, in so far as it relates to the proper platting and arrangement so as to insure manufacturing and transportation efficiency, is one of immediate importance for the reason that preparation to be fully effective must anticipate the actual use of the property for industrial purposes. The arrangement of industrial property involves the platting of streets and ways for the railway tracks that will be required to serve it. In property of this class, it is, perhaps, of greater importance that thoroughfares on which railway tracks may be laid be provided than that vehicle streets be platted. Unless a comprehensive plan of railway service is arranged for in the first instance,

as a final result it may become impracticable to serve some of the property with railway spurs, and in any event, the arrangement is likely to be awkward and inconvenient, as is exemplified in the older industrial communities of the East.

To bring about efficient property arrangement requires educational and persuasive work with the property owners, such as an organization of business men is eminently fitted to do. Along these lines the Industrial Bureau might advantageously encourage the formation of manufacturing centers similar to the Central Manufacturing District of Chicago or the project of the Industrial Commission of Minneapolis.

Preliminary to effective work along these suggested lines a physical study of the industrial district of Seattle should be made as a basis on which a comprehensive plan of action may be formulated. To take up the specific and detailed problems without such basic preparation is like a person trying to get some place without really knowing where he wants to go.

My observations in the leading cities would indicate that, to use a slang expression, Seattle has a chance to get the jump on her competitors in this matter of physical preparation for industrial development. Those interested in promoting the industrial growth of other cities apparently have failed to grasp the import and significance of such preparation, or at least to the same degree that the Seattle men do. That very fact constitutes one of the reasons why I predict that Seattle is going to take the lead among Pacific Coast communities in industrial matters.

There are, of course, problems other than transportation, among them being power, taxes and labor. Cheap power is now obtainable and pretty well assured for the future. In the matter of taxes, it may be worth while for the Bureau to consider partial tax exemption to manufacturers, as is done in some communities elsewhere. The labor problem, of course, we have with us always, but as compared with some other Pacific Coast points the conditions appear favorable.

In concluding the discussion under the head of "Preparation of the Industrial Field" it may be well to reemphasize the main points, suggesting work to be done.

SUMMARIZATION OF IMPORTANT POINTS.

- (1) Thorough study and analysis of Seattle's Industrial Field.
- (2) Outline a comprehensive plan for its development.
- (3) Bring about a terminal or belt-railway service which may be extended to all industrial properties as the development of the city requires.
- (4) Induce property owners to co-operate in the systematic and efficient platting and arrangement of their properties to the end that the advantages of the Central Manufacturing District and the Bush Terminals may be secured for all the industrial and terminal sections of Seattle.

PREPARATION OF THE MARKET

The preparation of the market, while in a degree a matter of salesmanship, suggests constructive work preparatory to the advent of the salesman who is bent on securing actual orders.

The writer is primarily an engineer, claiming experience only in the physical phases of industrial preparation, consequently it is rather presumptive on his part to treat this subject at all; but some general ideas in regard to the problem may be worthy of consideration.

To begin with, the market should be analyzed, its needs and possibilities, present and future, determined as far as practicable. Such analysis of Seattle's market will indicate two divisions; that is, (1) the Domestic market, (2) the Foreign market. In regard to the first, considerable knowledge is at hand, but concerning the second little is known outside of the fact that there is a demand from practically all parts of the world for certain of our primary products, such as timber, grain, fish and fruit.

(1) *The Domestic Market*: It is generally conceded that it will be difficult for the Pacific Coast, with its relatively small local consuming population, to make industrial headway against the established centers in the East. The mere fact that a situation is difficult, however, is not a sufficient reason for quitting. It will do no harm, at least, to thoroughly study and analyze the field. As an example: A large tonnage of a certain class of machinery is being shipped to Alaska. It is manufactured in the East, and Seattle gains little from its passage through the port. Where is it made? What does it cost to make it? What is the freight rate to Seattle? What is the selling price? Then find out what it would cost to make it here. The facts may show that this particular class of machinery can be manufactured here, or that it can not. But apply the same investigation to a long list of manufactured articles and out of the deck some trump cards are sure to be drawn.

Furthermore, if the field in staples seems to be so well covered by entrenched Eastern manufacturers that it appears unassailable, why not start something new that people will want when they find out about it? That field is never overcrowded. What are some of the things the world needs? What raw materials are at hand from which these things may be manufactured? The subject is worthy of investigation. For instance the gas engine industry of the Pacific Coast is located at San Francisco, even though the chief market is in and through Seattle. The industry is today centralized in San Francisco because it was established there in its infancy. A large market for crude oil engines has recently developed in the Northwest. The city getting the first plants for the manufacture of such engines is very likely to become the center of that industry on the coast.

It may be recalled that the Milwaukee Chamber of Commerce has accomplished much for its local industries through the up-building of the State and surrounding country, thus increasing the purchasing capacity of the domestic market. The idea is sound and its application to the best advantage one of great importance. The Seattle Chamber of Commerce has accomplished desirable results along this line, but as a part of the proposed industrial promotion programme it may be well to further study and analyze the possibilities and needs of the Northwest and push the development of Seattle's back country with renewed vigor.

(2) *The Foreign Market:* Seattle's local consuming population may be small compared to that of Eastern cities; but what about the market just across the Pacific pond, where there are several hundred million people whose increasing consuming capacity gives promise of wonderful trade opportunities?

A large tonnage now passes over Seattle docks en route to these Asiatic countries, and the future undoubtedly will witness a great increase of traffic. Why not analyze the trade? Why not endeavor to manufacture more of these commodities in the Puget Sound District? The world-shaping events in progress may throw open the door of opportunity. Other cities are watching. There is a big advantage in getting there first. Why not Seattle? The game is on. The stakes are big, but Seattle men are used to big undertakings, and the possible winnings may justify the chancing of a special effort to investigate, analyze and prepare the market for Seattle manufacturers.

The discussion of the "Preparation of the Market" may well be concluded by emphasizing the following points:

(1) Thoroughly study the markets; not superficially nor in specific matters only, but broadly and fundamentally.

(2) Analyze producing and distributing costs as between Seattle and established industrial centers in the East.

(3) Dare to pioneer and do something different—not rashly, but with mature judgment.

(4) Having ascertained its possibilities and needs, work energetically for the upbuilding of the State and Northwest.

Before concluding, it may be well to emphasize the need of awakening and stirring to activity the community's industrial and development spirit. This can be done most effectively through the press, by featuring news having to do with industrial and Northwest development matters until the community generally is thinking, talking and boosting along those lines. The newspapers are doing well in this matter, but through co-operation with the Industrial Bureau perhaps even more can be accomplished.

CONCLUSION

The European war has resulted in the coining of new phrases and in clothing old words with strong meaning. In concluding, therefore, let us borrow a couple of war terms with which to reemphasize two thoughts worthy of remembrance.

First, *Preparedness*. One of the chief lessons of the European conflict is the importance of preparation. The city that would win industrial preeminence must do more than just muddle along. It must prepare in the beginning for the industrial triumphs it would win in the end.

Second, *Mobilization*. The terrific effectiveness of a well-organized and mobile people has been strikingly exemplified in this war. The most successful commander-in-chief is he who can mobilize and bring into machine-like driving action all the available resources of his country. The most successful commercial bureau is the one that can mobilize, by inspiring to united effort in the industrial development of the community, all of the private, corporate and public forces available.

Finally, it may be said that the Industrial Bureau of the Seattle Chamber of Commerce is now facing the advent of the Puget Sound industrial era, in consequence of which it has the opportunity to initiate a great constructive work. It is in a position to lay the foundation of Seattle's future industrial greatness.

The men of the Bureau appreciate more fully the importance of laying that foundation broadly than those of any other organization I visited. Consequently, while it is going to be a long pull and will call for sustained effort during a period of ten years, rather than one; while it will demand sacrifices on the part of the leaders, also genuine courage to keep from yielding to temporary expediency in many instances; yet it may be predicted that Seattle during the next five or ten years will initiate an industrial terminal development that will establish her leadership in such matters.

PAUL P. WHITHAM,
Consulting Civil Engineer.

COMPARATIVE SUMMARY OF SEATTLE INDUSTRIES

FOR 1914 AND 1909

This table showing comparative summary of the Government Census of Industries in Seattle for 1914 and 1909 has been prepared by the United States Census Bureau. An analysis of the statistics shows that the activity this year (1916) far surpasses that during the period in which the 1914 census was taken. In some of the industries three or four times as many people are employed today as was the case two years ago. The table is as follows:

INDUSTRY	Census Year	No. of Establishments	Wage Earners (Av. No.)	Primary Horse-power	Wages	Cost of Materials	Value of Products
					Expressed in Thousands		
All Industries.....	1914	1,014	12,429	44,001	\$9,935.00	\$37,770.00	\$64,390.00
	1909	753	11,523	38,267	8,589.00	28,783.00	50,814.00
	1904	467	6,390	.....	4,318.00	14,358.00	25,406.00
Bread and other Bakery Products..	1914	132	534	653	416.00	1,283.00	2,355.00
	1909	78	295	148	260.00	893.00	1,550.00
Brick and Tile.....	1914	5	79	430	69.00	42.00	176.00
	1909	5	137	482	100.00	37.00	259.00
Butter, Cheese and Condensed Milk	1914	4	46	250	32.00	751.00	909.00
	1909	6	22	55	19.00	439.00	514.00
Canning and Preserving.....	1914	10	210	1,123	169.00	424.00	777.00
	1909	7	59	233	44.00	234.00	394.00
Carriages and Wagons and Materials	1914	10	62	120	60.00	56.00	155.00
	1909	12	109	73	95.00	117.00	298.00
Clothing, Men's, including Shirts...	1914	5	266	38	103.00	346.00	596.00
	1909	5	141	47	58.00	236.00	374.00
Confectionery and Ice Cream.....	1914	41	381	301	209.00	850.00	1,520.00
	1909	20	383	213	190.00	890.00	1,491.00
Copper, Tin and Sheet Iron Products	1914	45	236	133	189.00	481.00	906.00
	1909	36	352	116	282.00	557.00	1,131.00
Flour Mill and Grist Mill Products.	1914	10	279	3,425	222.00	6,202.00	7,601.00
	1909	7	155	2,365	111.00	3,872.00	4,430.00
Food Preparations.....	1914	15	52	91	32.00	219.00	327.00
	1909	11	65	48	39.00	220.00	442.00
Foundry and Machine Shop Products.....	1914	82	1,004	3,125	880.00	1,367.00	3,262.00
	1909	71	1,230	2,787	1,023.00	2,042.00	4,290.00
Fur Goods.....	1914	8	32	8	20.00	33.00	91.00
	1909	7	37	4	32.00	75.00	150.00
Furniture and Refrigerators.....	1914	24	100	227	75.00	98.00	273.00
	1909	17	166	239	139.00	140.00	405.00
Ice, Manufactured.....	1914	4	49	1,155	43.00	37.00	209.00
	1909	5	61	721	53.00	68.00	225.00
Leather Goods.....	1914	10	62	30	49.00	227.00	386.00
	1909	8	81	41	60.00	267.00	444.00
Liquors, Malt.....	1914	5	481	2,547	503.00	1,063.00	4,800.00
	1909	5	362	1,880	300.00	877.00	2,815.00
Lumber and Timber Products.....	1914	55	2,337	15,917	1,893.00	3,705.00	6,420.00
	1909	65	3,268	19,971	2,242.00	3,918.00	8,148.00
Marble and Stone Work.....	1914	4	27	26	23.00	35.00	80.00
	1909	5	54	38	47.00	81.00	218.00
Patent Medicines and Compounds and Druggists' Preparations.....	1914	12	20	18	12.00	83.00	156.00
	1909	8	24	54	12.00	42.00	153.00
Printing and Publishing.....	1914	214	1,057	1,264	952.00	1,143.00	4,613.00
	1909	133	1,042	791	904.00	1,042.00	4,009.00
Slaughtering and Meat Packing....	1914	3	481	900	379.00	9,706.00	11,133.00
	1909	4	325	468	240.00	6,410.00	7,171.00
Tobacco Manufactures.....	1914	24	56	.....	45.00	52.00	145.00
	1909	24	65	.....	45.00	46.00	140.00
All other Industries.....	1914	292	4,578	12,220	3,555.00	9,562.00	17,500.00
	1909	214	3,090	7,493	2,294.00	6,280.00	11,763.00

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